CLAIMS

1. A method for production of three-dimensional bodies by successive fusing together of selected areas of a powder bed, which parts correspond to successive cross sections of the three-dimensional body, which method comprises the following method steps:
application of powder layers to a work table,
supplying energy from a radiation gun according to an operating scheme determined for the powder layer to said selected area within the powder layer, fusing together that area of the powder layer selected according to said operating scheme for forming a cross section of said three-dimensional body, a three-dimensional body being formed by successive fusing together of successively formed cross sections from successively applied powder layers, characterized in that said selected area is divided into one or more inner areas I, each having an edge R, where the inner area I is fused together in the course of a movement pattern for the focal point of the beam of the radiation gun which comprises a main movement direction and an interference term which is added to said main movement direction and has a component in a direction at right angles to the main movement direction.

2. The method as claimed in claim 1, characterized in that the interference term changes direction and has a time mean value corresponding to zero drift from the main movement direction.

3. The method as claimed in claim 1, characterized in that said interference term has a component which is parallel to the main movement direction.

4. The method as claimed in claim 3, characterized in that the movement pattern corresponds to a partly overlapping helical movement of the beam of the radiation gun.

5. The method as claimed in any one of claims 1-4, characterized in that said edge is fused together in the course of a mainly rectilinear movement of the beam of the radiation gun.

6. The method as claimed in any one of claims 1-5, characterized in that an energy balance is calculated for at least said selected area within each powder layer, it being determined in the calculation whether energy radiated into the selected area from the surroundings of the selected area is sufficient to maintain a defined working temperature of the selected area.

7. The method as claimed in claim 6, characterized in that, in addition to said energy for fusing together the selected area, energy for heating the selected area is supplied if the result of the energy balance calculation is that sufficient energy for maintaining an intended working temperature of the selected area is not present, a defined working temperature of the selected area then being achieved.

8. The method as claimed in claim 6 or 7, characterized in that the energy balance for each powder layer is calculated according to $E^{in}(i) = E^{out}(i) + E^{heat}(i)$, where $E^{in}(i)$ represents energy fed into the selected area, $E^{out}(i)$ represents energy losses through dissipation and radiation from the selected area, and $E^{heat}(i)$ represents stored in the selected area.

9. An arrangement for producing a three-dimensional product, which arrangement comprises a work table on which said three-dimensional product is to be built up, a powder dispenser which is arranged so as to distribute a thin layer of powder on the work table for forming a powder bed, a radiation gun for delivering energy to the powder, fusing together of the powder then taking place, means for guiding the beam emitted by the radiation gun over said powder bed for forming a cross section of said three-dimensional product by fusing together parts of said powder bed, and a control computer in which information about successive cross sections of the

three-dimensional product is stored, which cross sections build up the three-dimensional product, where the control computer is intended to control said means for guiding the radiation gun over the powder bed according to an operating scheme forming a cross section of said three-dimensional body, said three-dimensional product being formed by successive fusing together of successively formed cross sections from by the powder dispenser, characterized in that the control computer is arranged so as to divide said selected area into one or more inner areas I which each have an edge R.

10. The arrangement as claimed in claim 9, characterized in that the control computer is also arranged so as to calculate an energy balance for at least the selected area within each powder layer, it being determined in the calculation whether energy radiated into the selected area from the surroundings of the selected area is sufficient to maintain a defined working temperature of the selected area.

11. The arrangement as claimed in claim 9 or 10, characterized in that the control computer is arranged so as to control said operating scheme for supply of, in addition to said energy for fusing together powder layers, energy for heating the powder layer if the result of the energy balance calculation is that the operating scheme is not providing sufficient energy for maintaining an intended working temperature of the selected area, a defined working temperature of the selected area then being maintained.

12. The arrangement as claimed in any one of claims 9-11, characterized in that the control computer is arranged so as to calculate the energy balance for each powder layer according to $E^{in}(i) = E^{out}(i) + E^{heat}(i)$, where $E^{in}(i)$ represents energy fed into the selected area, $E^{out}(i)$ represents energy losses through dissipation and radiation from the selected area, and $E^{heat}(i)$ represents energy stored in the selected area.

13. The arrangement as claimed in any one of claims 9-12, characterized in that the arrangement also comprises means for sensing the temperature distribution of a surface layer located in the powder bed.